Zebra™ ZVac Vacuum System

Operator's Manual

If you have any questions or require product support, please contact 888-249-4855

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We reserve the right to change any information without notice.

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1- General Information

1.1 Introduction

This Maintenance and Instruction Manual contains the information required to familiarise the operator with the proper use of the following types of vacuums (also referred to as “machine” in the following manual): ZV110, ZV220, ZV440

The operational safety of the machine in your possession is entrusted to those who work with it each day.

These persons must therefore have detailed information about how to correctly use, operate, service, and repair the vacuum.

This manual has been compiled in order to inform machine users about the prescriptions and basic regulations able to ensure their safety and allow the vacuum to remain in a good working condition for the longest possible time.

Personnel authorized to work with the machine must read this manual before the machine is started.

Keep the manual near the machine, in a protected and dry place for future consultation when required. Ask for another copy from your Dealer or Zebra Skimmers if this manual is lost or deteriorates.

This manual reflects the state-of-the-art at the moment the machine was sold and cannot be considered inadequate if modifications are subsequently made in compliance with further experience.

The Manufacturer therefore reserves the right to update the production range and relative manuals without being obliged to update previous machines.

1.2 Testing and Guarantee

Each machine is subjected to a final test involving its operations and performance. This guarantees maximum efficiency during the work the machine must carry out.

1.3 Requesting Assistance

Contact the Manufacturer in the event of faults or malfunctions requiring the intervention of specialized technicians.

1.4 Exclusion of Liability

The machine was delivered to the user according to the conditions that were valid at the time of purchase.

For no reason shall the user be authorized to tamper with the machine. Contact Zebra Skimmers in the event of any faults. All attempts by the user or by unauthorized personnel to demount, modify or, more generally, tamper with any part of the machine, shall void the warranty and relieve the Manufacturer of all responsibility for damage to either persons or property caused by such action. The Manufacturer shall also be relieved of liability in the following cases: - incorrect installation

- improper use of the machine by inadequately trained personnel

- incorrect or insufficient maintenance

- use of spurious spares or use of spares that are not specifically made for the model in question

- total or partial failure to comply with the instructions

- exceptional environmental events

2 - Delivery and Handling

2.1 Delivery

The machine is fixed to a pallet and wrapped in plastic film. On arrival, check the machine to see that it has not been damaged during transport. If this is the case, contact the Manufacturer and the hauler immediately.

2.2 Handling

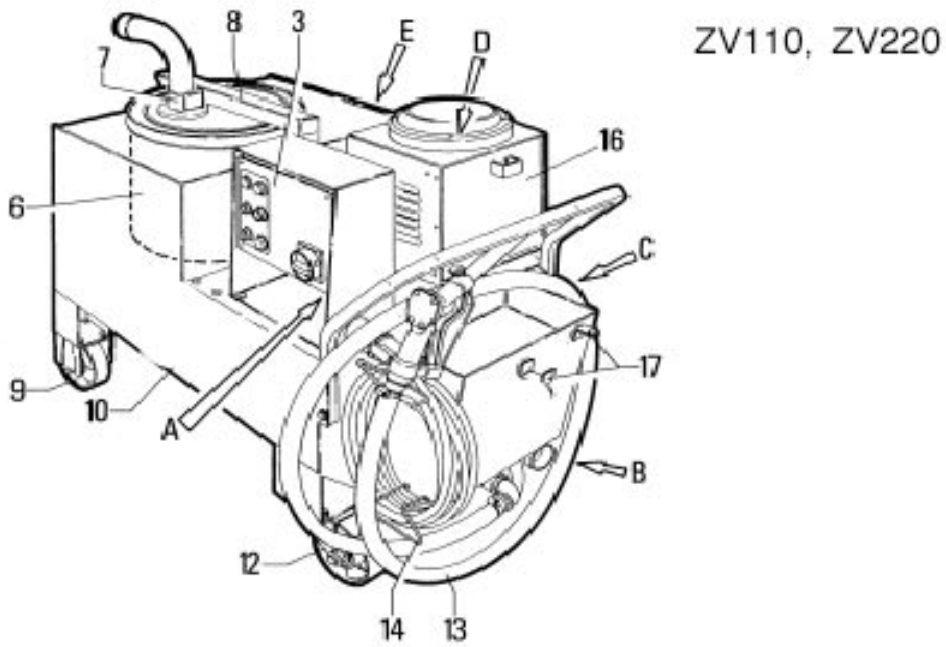
Use a lift truck with proper capacity to lift and convey the vacuum, positioning the forks in the center of the load. Refer to the technical data section for weights of each machine.

3 - General Descriptions

3.1.1 Main Parts Key, ZV110, ZV220 (Fig. 3.1.1)

1. Vacuum motor
2. Liquid ejector pump
3. Control Panel
4. Automatic level control
5. Safety filter
6. Swarf tank
7. Quick fitting hose
8. Swarf tank cover
9. Fixed wheel
10. Liquid tank
11. Sight glass
12. Castors with brake
13. Liquid drain off gun tube
14. Cable connection
15. Fluid drain cock
16. Sound proofing box
17. Gun connection

Figure 3.1.1



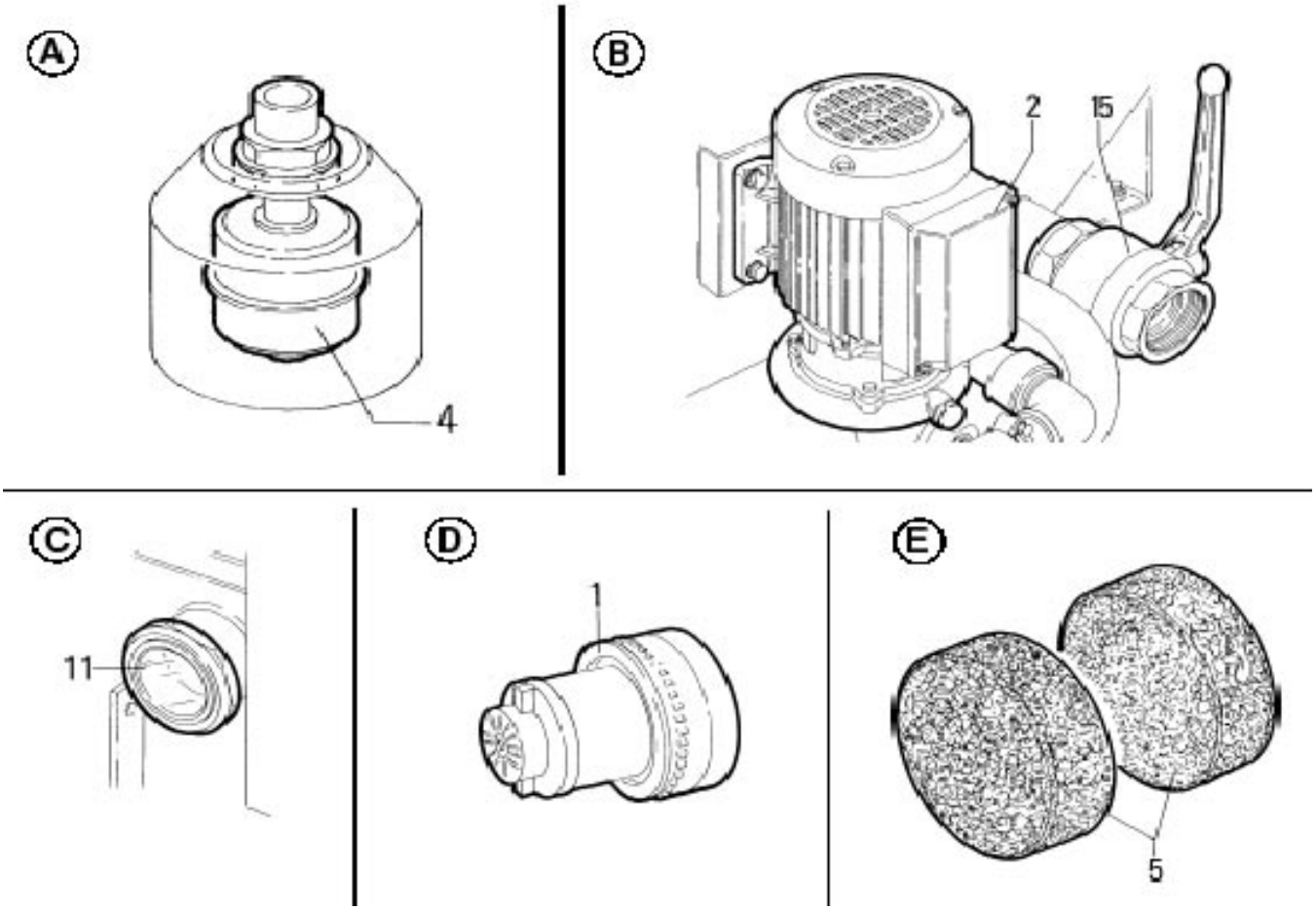
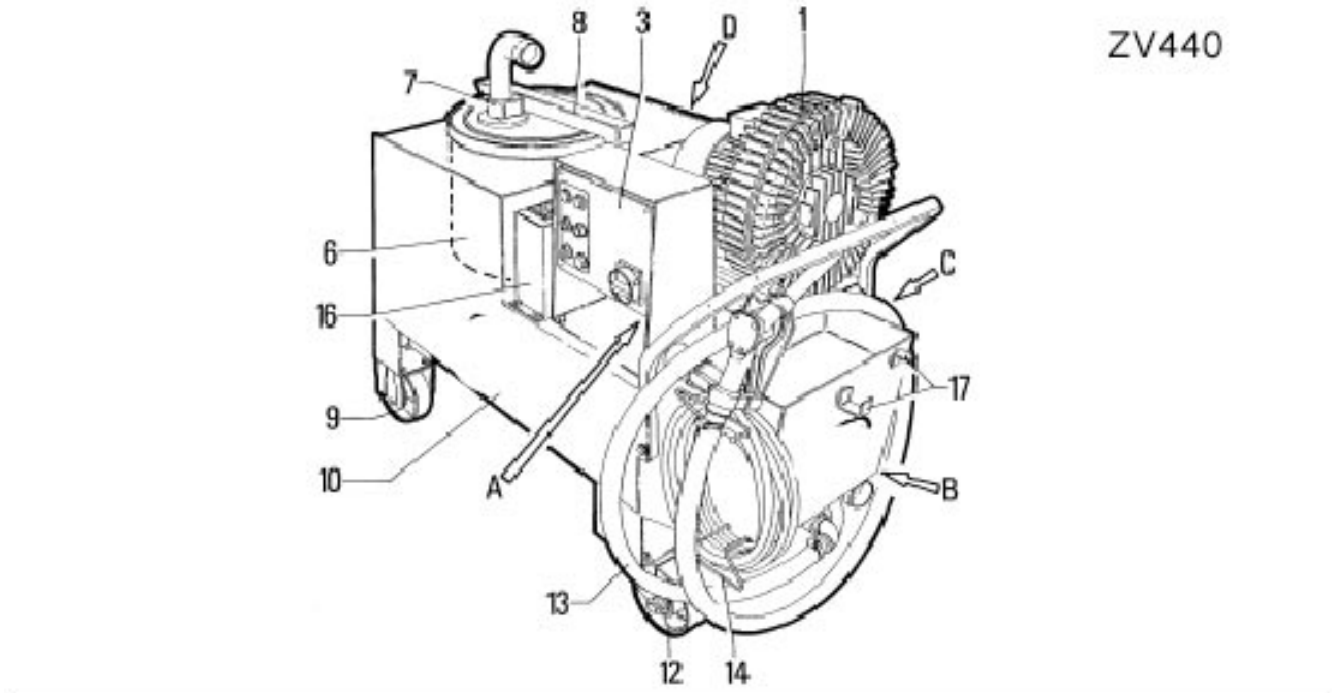
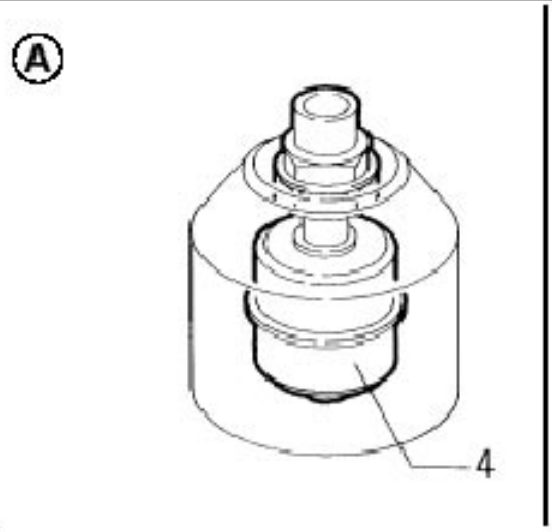
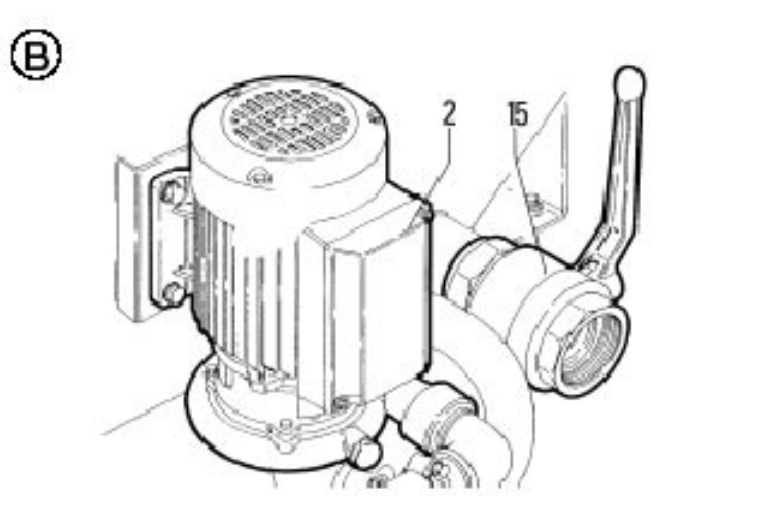
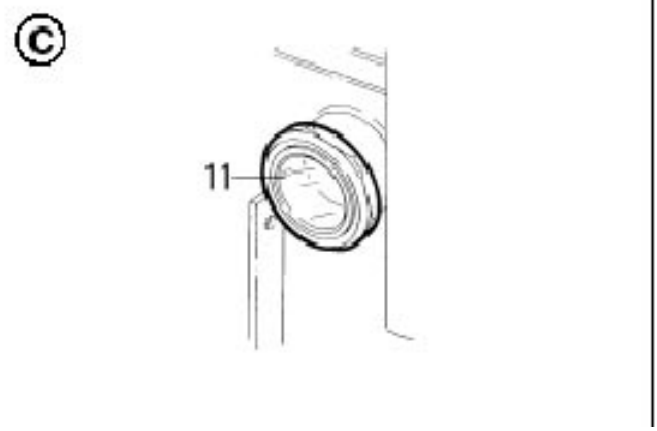


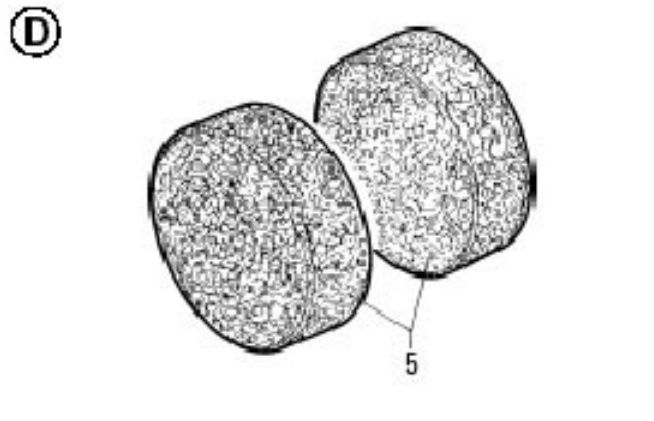
Figure 3.1.2











3.1.2 Main Parts Key, ZV440 (Fig. 3.1.2)

1. Vacuum motor
2. Liquid ejector pump
3. Control Panel
4. Automatic level control
5. Safety filter
6. Swarf tank
7. Quick fitting hose
8. Swarf tank cover
9. Fixed wheel
10. Liquid tank
11. Sight glass
12. Castors with brake
13. Liquid drain off gun tube
14. Cable connection
15. Fluid drain cock
16. Silencer
17. Gun connection

3.2 Description of Machine

The vacuum is ideal for extracting fluids and small quantities of swarf. Practical and functional, it is suitable for lathes, mills, and all machine tools where coolants and swarf need to be separated.

3.3 Operating Principle

The machine simultaneously draws up swarf which is separated and contained, and fluid, which is drawn into the main container.

When the liquid container is full, a level control switches off the suction and then empties the liquid by means of the pump.

The swarf is then removed by hand by means of the swarf container.

3.5 Proper Use

The exhauster is designed to operate in shops where metal swarf is removed from machining operations. It can suck in and separate the metal portion of the machining process (swarf) from the fluid part (cutting fluids), thus allowing both to be quickly recovered.

All other use is prohibited and will void the warranty.

3.6 Improper Uses

The following is a list of machine uses that should be STRICTLY AVOIDED:

-Never operate in any environment where there is a risk of explosion.

-Never open the container while machine is running.

-Never suck up lit cigarettes ends. This may cause filter to catch fire.

-Never use the vacuum on irregular ground or on slopes exceeding 5%.

-Never open the door to the electric panel. This door should only be opened by a qualified electrician once the main power is cut by cord disconnection.

-It is forbidden to use the vacuum to suck petrols, solvents, radioactive material, or other contaminants.

3.7 Residual Hazards

Danger of electrical shock:

The terminal strip that connects the main electricity to the electrical panel remains powered by the main even when the main switch has been turned to the zero “0” position.

3.4 Technical Data

	ZV110	ZV220	ZV440
Voltage:	110v	240v	440v
Power phases:	1	1	3
Power in watts:	1460	1460	2550
Waterlift, max (in.):	135	135	145
Airflow, max (cfm):	92	92	219
Liquid container:	55	55	55
Dimensions:	48x24x40	48x24x40	48x24x40
Weight (lbs.):	300	287	338
Insulation (class):	B	B	F
Noise Level (dBA):	70	70	73

4- Safety

4.1 General Precautions

Become thoroughly familiar with the contents of this manual before starting, operating, or servicing the unit in any way.

Operate the unit in a safe manner, practicing all plant safety procedures required by law.

Never start the unit if it is faulty. Contact authorized personnel immediately.

Connect the machine to a main electrical with a sufficient ground circuit. Any misused electrical connection will void the warranty.

Never move the vacuum by pulling the power cable. This may damage the unit and put the operater at risk of electrocution.

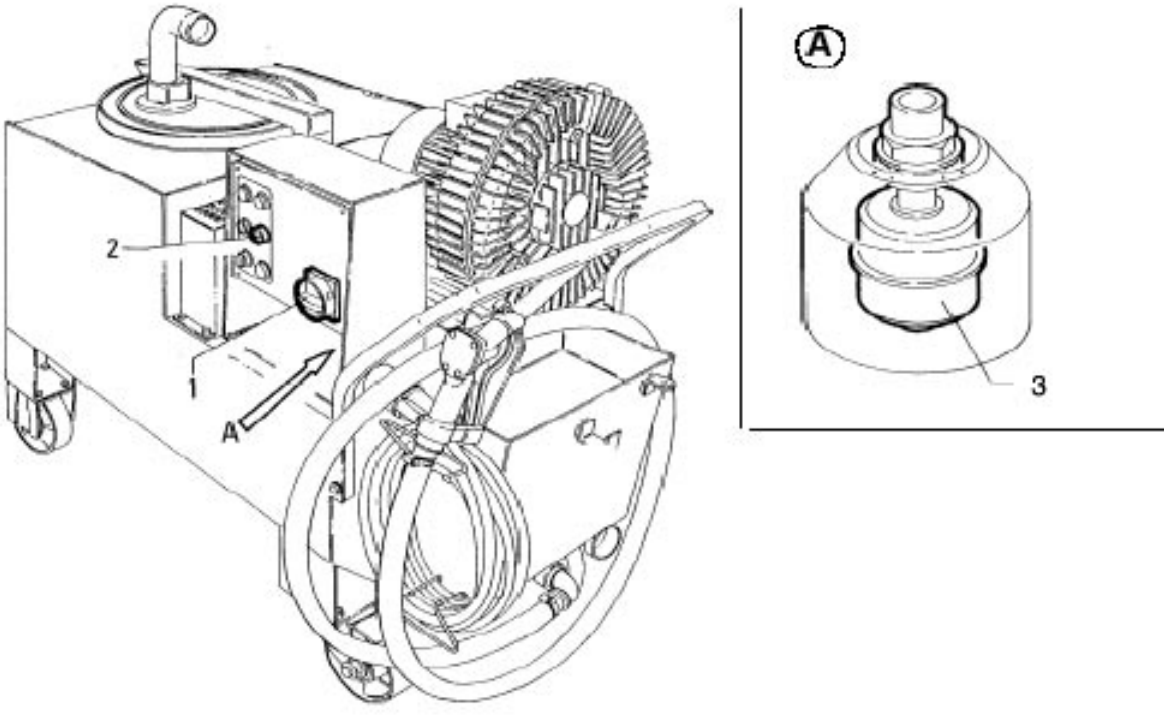
Use extension cables suitable for the purpose; the extension cable must be larger than that of the power cable of the machine in order to prevent overheating.

4.2 Safety Devices (Fig. 4.2)

1. Main lockable door blocking switch (emergency switch)
   Prevents the door of the electric panel from being opened when the switch is in position “I” (electrical components powered).

   !!ATTENTION!!
   When the electric powerplug has been plugged into the electricity main and the main switch is in position “0” (zero), the door can be opened by means of the four locking screws. In this condiiton, the terminal strip of the electric panel remains powered with the consequent risk of electric shock.
2. Stop button
   Stops the vacuum from operating in an emergency situation.
3. Level probe
   Automatically stops the suction action when the level of the fluid in the tank reaches its maximum level, preventing fluid from flowing into the filter chamber.

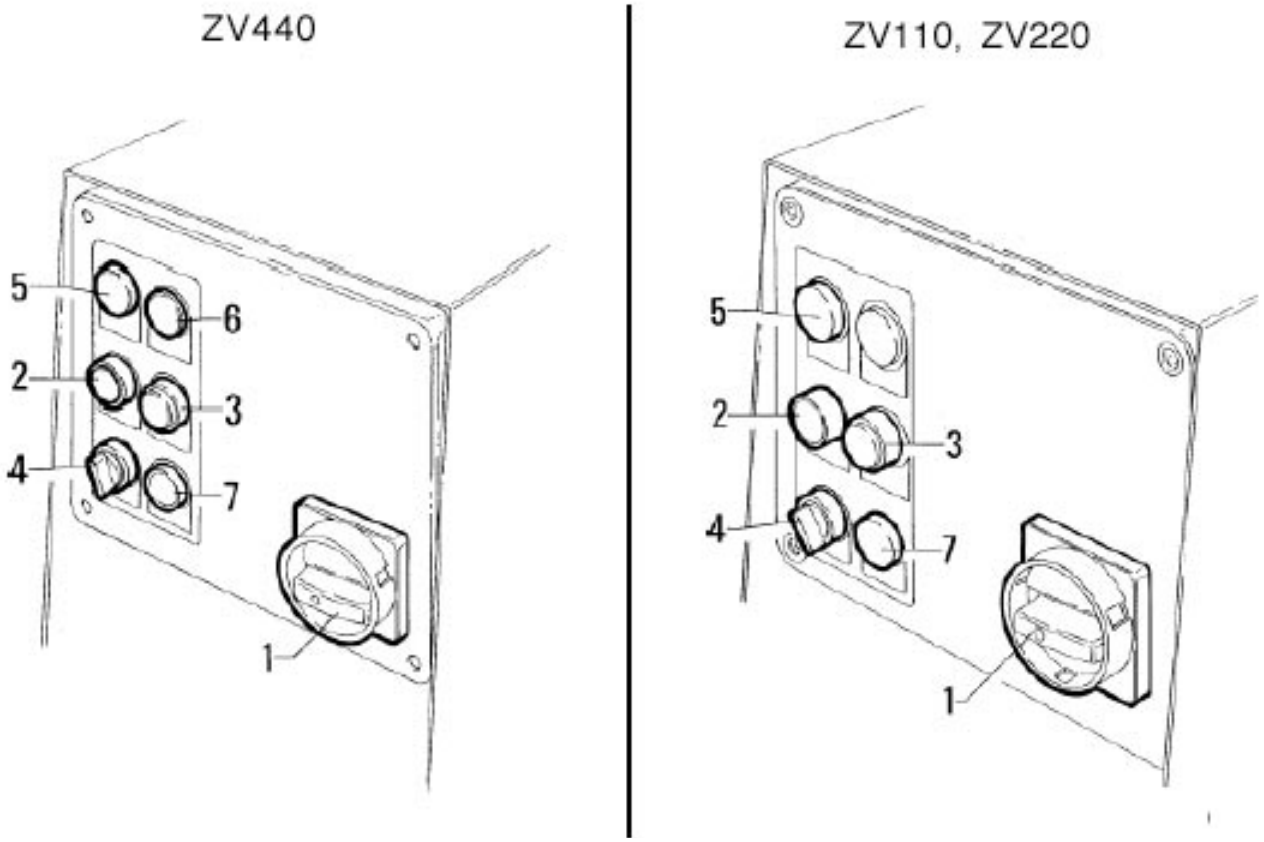
Figure 4.2



Model ZV440 shown

5- List of Controls and Indicators

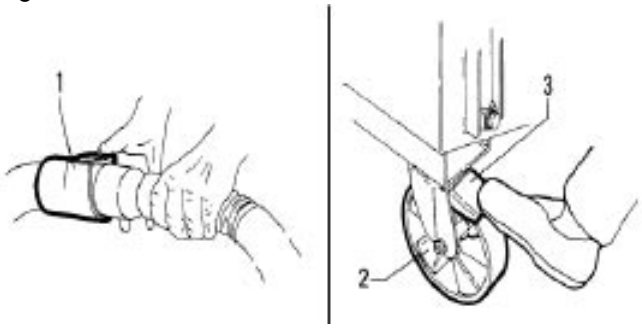
Figure 5



1. Lockable Main Switch (red on yellow background)
   Position “0” cuts the power supply
   Position “I” powers the machine and indicator light “6” comes on
2. Start Button (green in color)
   When main switch is in ON position, press button “2” to start the vacuum
3. Stop Button (red in color)
   Press this button to stop vacuum operation
4. Fluid Discharge Pump Selector
   The discharge pump will be stopped when in position “0”
   Initiate the discharge pump by turning to position “I”
5. Indicator Light (white in color)
   Indicates the machine is electrically powered
6. Indicator Light (red in color)
   Indicates that the thermic protection has been tripped due to excessive power draw
7. Indicator Light (yellow in color)
   Indicates the fluid in tank is at its maximum level. The suction of the unit is automatically turned off until liquid is discharged

5.1 Preliminary Start-up Operations

Figure 5.1



- Fit the accessories on suction inlet “1”
- Place the vacuum near the place of use and then lock the castors “2” by pressing lever “3” downwards

5.2 Starting

Reference Figure 5.1 on previous page

Check that the voltage and frequency of the main electricity correspond to the values indicated on the data plate. Fit the plug into the socket.

- Turn main switch to ON position. Light 3 will come on
- Press the start button

5.3 Stopping

- Press the STOP button.

5.4 Stopping, automatic

The suction action will automatically stop when the fluid in the tank reaches the maximum level, activated by the level probe

5.5 Emptying the Tank (Fig. 5.6)

- Turn fluid discharge selector “4” to ON position to drain fluid from the tank
- Hold the gun “2” and press lever “3” to drain the fluid from the liquid holding tank

5.6 Emptying the Container (Fig. 5.7)

- Detach the hose pipe “1” from the suction port
- Detach the clip “2” and remove the cover “3”
- Lift the swarf container “4” using suitable lifting means
- Empty the container into the proper disposal bin
- Thoroughly clean container holes to prevent obstructions

Figure 5.6

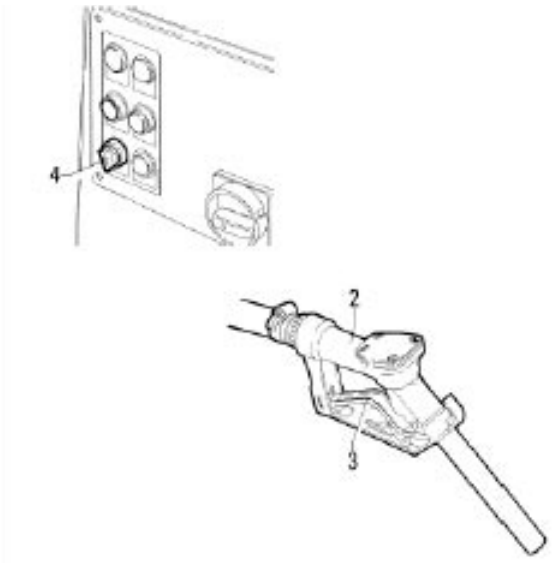
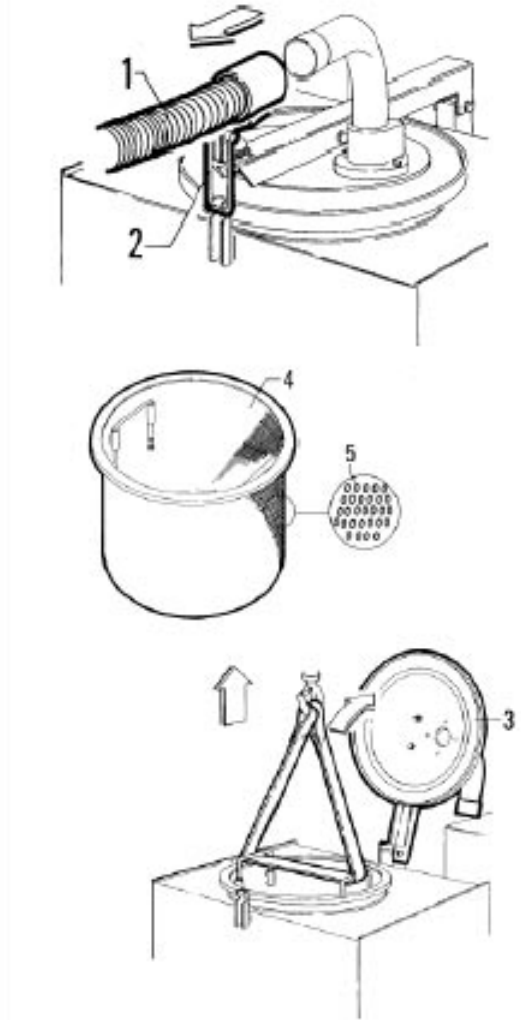


Figure 5.7



6- Maintenance

6.1 Foreward

The suction unit needs no particular maintenance or lubrication.

Remember however, that correct use and servicing are essential if the safety and efficiency of the vacuum are to be guaranteed.

To ensure regular and constant operation and to prevent the warranty from becoming void, only use genuine Manufacturers spare parts when repairs are needed.

6.2 Routine Maintenance

Strictly comply with the following operations to ensure that the vacuum remains in a constantly reliable condition.

Before Each Work Shift
- Empty swarf from container basket
- Clean the container holes of debris
- Check fluid level of machine

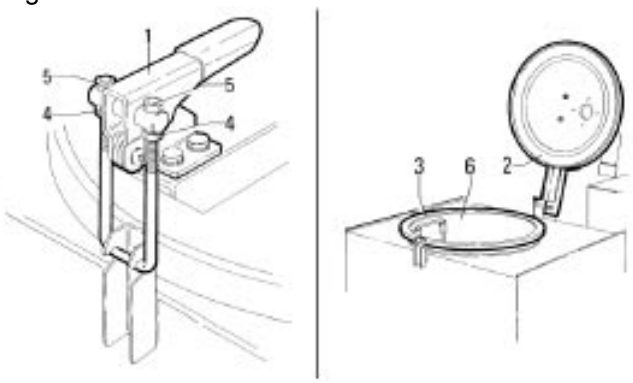
Every 200 Hours (monthly)(see section 6.3)
- Check the condition of the vacuum seals
- Make sure that the hose parts are in good condition
- Check the condition of the power cable
- Check the condition of the suction filter

6.3 Carrying Out Required Inspections

Check the wear on the retention seal of the container (Fig. 6.3.1)

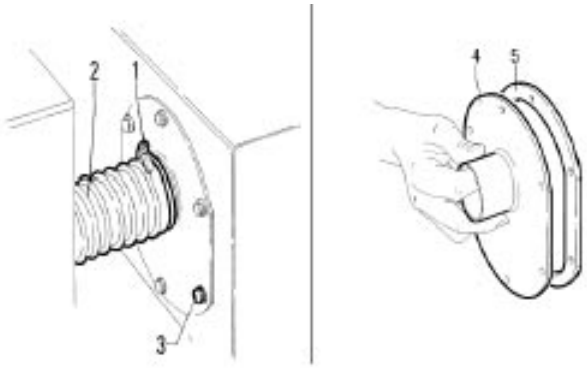
- Release the closing hooks “1” and lift cover “2”
- Check to make sure that the seal “3” is not excessively worn or torn
- Adjust the pressure exercised by the cover on the seal if the seal itself is in good condition but is still not completely tight
- Loosen nuts “4”
- Tighten nuts “5” until cover “2” has been fully closed. Now tighten nuts “4”
- Replace it if this is the case, mounting the seal with the logo facing upwards
- To replace, container “6” must be removed

Figure 6.3.1



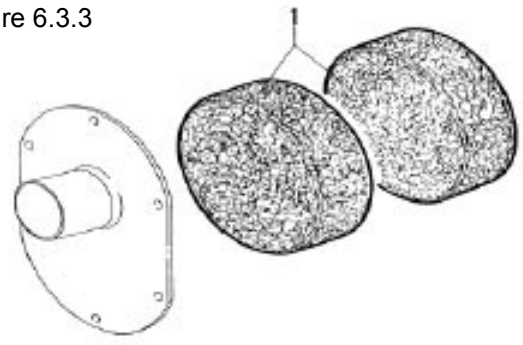
Check the wear on the retention seal of the filtering chamber (Fig. 6.3.2)
- Loosen clamp “1”
- Detach the hose “2”, remove the screw “3” and lift the cover “4”. Seal “5” will now be accessible
- Make sure that it is not torn or cracked. If so, replace it. Mount the new seal correctly.

Figure 6.3.2



Filter Inspection (Fig. 6.3.3)
- Demount the cover as described above
- Lift the multi-stage sponge filter “1”
- Make sure it is in very good condition
- Clean filter with compressed air, if needed
- Change filter if in poor condition

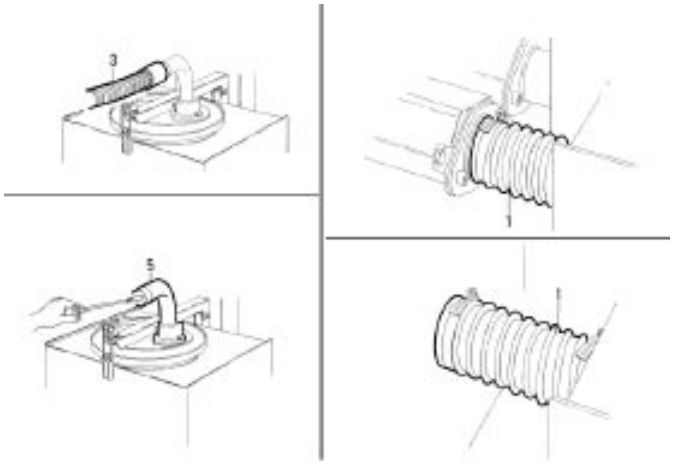
Figure 6.3.3



Checking Condition of Hoses (Fig. 6.3.4)

- Check tube “1” to make sure that it is in perfect condition and correctly fixed
- Also check condition of suction hose “3”, which is highly exposed to wear and breakage due to its suction function. Pull pipe “3” out by hand to replace
- Inspect for clogging in outlet “3” or “5”, scraping any debris that may have accumulated

Figure 6.3.4



Checking/Replacing Power Cable (Fig. 6.3.5)
Only authorized electricians may perform this maintenance

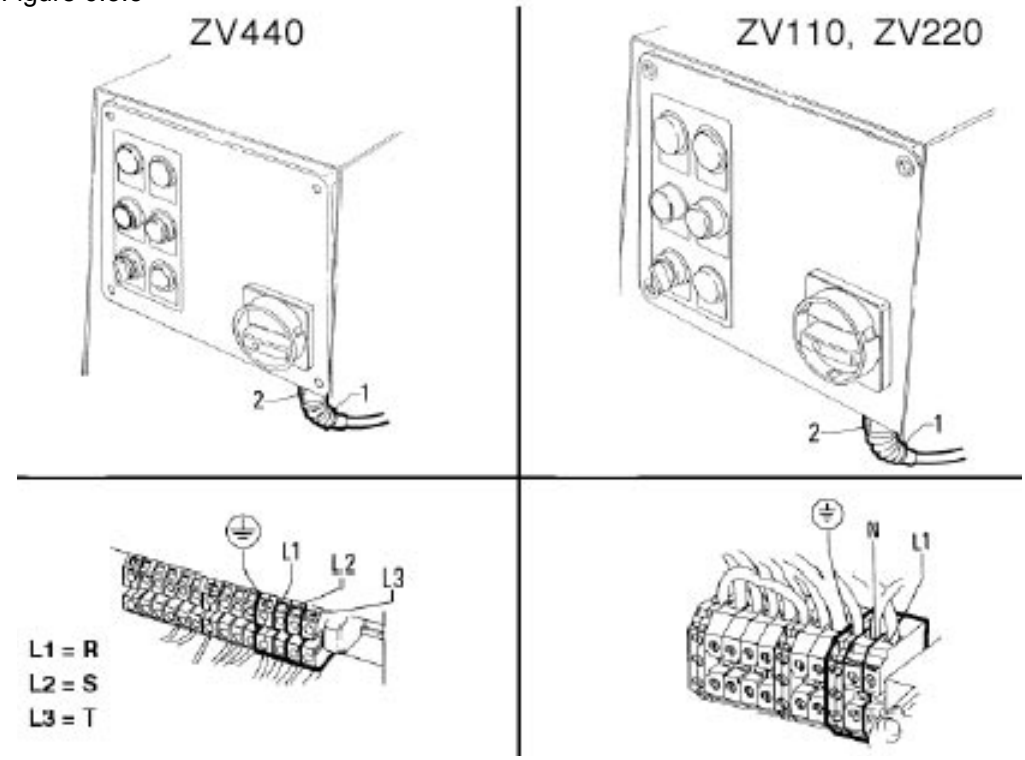
Model ZV110, ZV220

- Make sure that the power cable “1” is in good condition. If not, replace as follows:
- Unscrew the three leads from terminals N, L, ground
- Slacken cable clamp “2”, remove the cable “1” and replace it with a new one possessing the identical characteristics (non-flame propagating NEOPRENE 3G 1,5 type)

Model ZV440

- Make sure that the power cable “1” is in good condition. If not, replace as follows:
- Unscrew the three leads from terminals R, S, T, ground
- Slacken cable clamp “2”, remove the cable “1” and replace it with a new one possessing the identical characteristics (non-flame propagating NEOPRENE 4G 12,5 type)

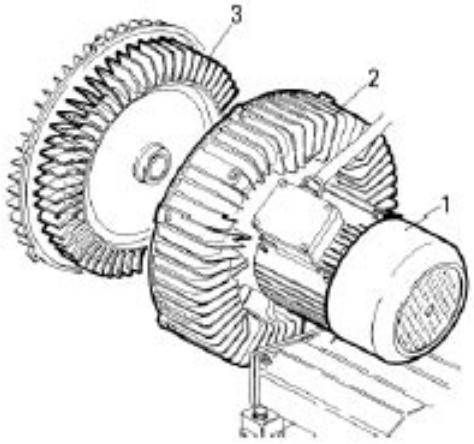
Figure 6.3.5



Check Cooling System of Suction Unit (model ZV440) (Fig 6.3.6)

- The following maintenance will lesson the likelihood of the motor overheating and breaking down
- Make sure that the slits in the protective casing are always perfectly clean and not clogged in any way
- Make sure that the cooling slits on the motor cap “1” are not clogged
- Make sure there are no dust deposits on casing “2” of the impellar “3”;
  Dust deposits may unbalance the fan, creating abnormal vibrations and quickly wear the bearings
- If the suction unit does need to be removed from the casing, lifting means and safe anchoring will be necessary

Figure 6.3.6



6.4 Lubrication & Cleaning

- The machine needs no lubrication
- Wear proper safety equipment when cleaning the machine, filters, tank, and hoses
- Do not use gasoline or flammable solvents or detergents
- Disconnect the exhauster from the main electricity before cleaning
- Do not use high pressure water to clean any part of the unit

6.5 List of Accessories and Recommended Spares, models ZV110 & ZV220

Standard Accessories Package

ZVXF100	Filter Bag Insert, 100µ
ZVXFSS500	SS Filter Container, 500µ
ZVXFRNA5”	Flat Rubber Nozzle Attachment
ZVXRCA	Rubber Cone Attachment, 6” long
ZVXCSIT	Curved Steel Intake Tube, 22”
ZVXMCA	Metal Crevice Attachment, 20”
ZVXCSW	Continuous Suction Wand, 36”

Optional Accessories

ZVXTCA	Tapered Cone Attachment, 8”
ZVXMCBA	Metal Crevice Brush Attach’t., 9”
ZVXBA	Brush Attachment, 4” diam.
ZVXEx	Wand 3’3” Extension Wand
ZVX	Wand 4’ Double-curved Wand
ZVXSA	Scraping Nozzle Attachment, 6”
ZVXFBA12	12” Floor Brush Attachment

Recommended Spare Parts Listing

ZVXF100	Filter Bag Insert, 100µ
ZVXFSS500	SS Filter Container, 500µ
ZVXDHose	Discharge Hose, 10 ft.
ZVXIHose	Intake Hose, 15 ft.
ZVXLCV	Level Check Valve
ZVXCL	Seal Container Lid Main Seal
ZVXMP	SealMotor Protection Seal
ZVXPump	Pump

7- Troubleshooting

Fault	Causes	Remedies
The vacuum suddenly stops	Thermic protection tripped (red warning light)	Check the setting of the thermic protector Check the motor power draw Reset the thermic protector
The efficiency of the vacuum has dropped	Gauze filter clogged Suction pipe clogged	Clean the netting basket Clean the suction pipe
Fluid spills from the exhauster silencer	Level gauge is blocked Level gauge is faulty	Demount and clean Replace level gauge
Electrostatic current on the vacuum	Non-existing or inefficient earthing	Check all earth connections, check suction inlet fitting. Pipe must also be strictly anti-static

Notes

Please contact Zebra Skimmers Corp. at 888-249-4855 should you need assistance